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ABSTRACT

The importance of learning styles to student retention and career decision guidance is considered. Learning style is the way people process information and solve problems. Research on right and left brain processing, which indicates that the left hemisphere controls thoughts that are predominately rational and the right hemisphere controls thoughts that are predominately intuitive, has implications for learning styles. Findings indicate both kinds of processing are equally valuable; yet, education concentrates heavily on the left brain while ignoring the development of the right. Since students differ in learning style, certain educational approaches are more effective than others for each individual. Some researchers have theorized that learning style and mapping can be used to help determine the style of work for which one is best suited. Retention in school may also be strengthened when students are able to find the right major based on knowledge and learning style. Measures that are designed to identify learning styles are described as follows: Group Embedded Figures Test (Witkin, Oltman, Raskin, and Karp), Learning Style Inventory (Kolb), Learning Style Inventory (Dunn, Dunn, and Price), Prescription for Learning (Dixon), Learning Style Inventory (Renzulli and Smith), Cognitive Style Interest Inventory (Hill), Inventory of Learning Process (Schmeck), Learning Style Inventory (Silver and Hanson), and Transaction Ability Inventory (Gregoric). In addition, preliminary findings of research studying the relationship between learning style, grade point average, American College Testing scores, attrition, and choice of major are briefly reviewed. (SW)

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Learning Styles: A Pivotal Point For Retention and Career Decision Guidance

What is Learning Style?

The way you acquire meaning from the world about you is known as your educational cognitive style. The term "cognitive style" implies a habitual pattern or preferred strategy of information processing. It is an attempt to understand aptitude as a process of attacking tasks. This style may be influenced by a person's age, gender, socio-economic status, motivation, race, family background, urban or rural residency, talent, life experiences, and personal goals.

Learning style is the way people process information and the way they solve problems. It is a person's typical mode--receiving, storing, thinking, as well as problem solving. Our brain is like a computer. It receives information, which is stored--some of it more deeply than others; and the information can be pulled out of the computer, or brain, as it is needed.

McCarthy (1981) combines research on learning styles with right/left brain processing research. The two halves of the brain, the right and the left hemispheres, process information differently. The left hemishpere of the brain controls the thoughts that are predominately rational and the right hemisphere controls thoughts that are predominately intuitive. The left hemisphere is primarily involved with intellectual, analytic, logical thinking, verbal and mathematical functions and sequential processing. It is chiefly involved with cognitive matters. The right hemisphere involves intuitive, visuo-spatial, subjective processing. Research indicates that both kinds of processing are equally valuable. Yet eudcation concentrates heavily on the left brain while ignoring the development of the right.

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The forebrain is the mind's manager, through which all questions involving decision-making must pass. Under forebrain monitoring and guidance, the left brain, primarily through consciousness, processes the information received much like a computer, with pattern recognition equipment. It scans the data and decides what is sense and what is nonsense and what should be done with it--what action to take or not to take.

Your cognitive style is determined by the way you store incoming information in your brain, whether you tuck isolated bits into your memory or whether you can sort out relevant information, thus reducing the memory load.

Your learning style is also determined by the way you take note of your total surroundings, how you seek meaning, how you become informed. Are you a listener or a reader? Are you concerned only with your own viewpoint or are you influenced in decision-making by your family or associates? Do you reason in categories as a mathematician does or in relationships as a social scientist does? Do you need to be shown how to do a task or to watch us doing the task ourselves? Do you spend much time in thought, in study, in meditation or would you rather observe people and environment? Emphasis is placed on how you organize your experiences of situations and the way in which you learn alternatives or more appropriate kinds of organizing experiences. No two people in the entire world learn in exactly the same way, as no two people think exactly alike. To say that a student differs in learning style means that certain educational approaches are more effective than others for him or her.

Retention and Career Decision

Can learning style be used as a pivotal point for retention and career

decision guidance? Some researchers have theorized that learning style and mapping can be used to help determine the style of work for which one is best suited. Mapping can be used to point one toward a selection of a vocation that would be suitable for one's style or can confirm one's vocational decision. If students know their own learning style, they can have a better understanding concerning the type of work for which they are most suited. In turn, retention at an institution of learning can be strengthened when students are able to find through their learning style, the major that leads to success for them.

However, learning style is not immutable. Missing strengths required for specific majors can be augmented to students' existing strengths. This can be accomplished by college students through careful selection of courses by the student with their academic adviser.

Instruments for Mapping

Some researchers feel that ways of learning persist even if goals and content changes, while others feel they vary according to subject matter and maturity. Important clues concerning the way students take in and process information are being provided by researchers. The most important efforts have established the identification of four major learning styles. Some samples of these efforts are:

Group Embedded Figures Test by Wilkin, Oltman, Raskin and Karp.

Learning Style Inventory by Dunn, Dunn & Price.

Learning Style Inventory by David A. Kolb.

Prescription for Learning by Nancy Dixon

Learning Style Inventory by Renzulli and Smith

Cognitive Style Interest Inventory by Joseph Hill

Inventory of Learning Process by Ronald Schmeck

Learning Style Inventory by Silver & Hanson

4 Mat by Bernice McCarthy

Transaction Ability Inventory by Anthony Gregorc

Description of sample learning style inventories are available in supplementary paper.

Research Finding on Learning Styles: A Pivotal Point for Retention and Career Decision Guidance

The preliminary findings on the research, Learning Styles: A Pivotal Point in Career Guidance and Retention being conducted by Jeannette Jenkins and Tom Roy at Southern Illinois University-Carbondale can be examined. The results from the mapping of the student's learning style through Anthony Gregorc's Transaction Ability Inventory were used to determine if there is a relationship between learning style, GPA, ACT scores, attrition and choice of major.

It has been determined that the major and attrition in the Teacher Education Program were nominal data and couldn't be used as variables in the statistical procedure.

There were two variables--GPA and ACT for analysis of regression. The dependent variables were the four learning styles: Concrete Sequential, Abstract Random, Abstract Sequential and Concrete Random. The independent variables were GPA and ACT.

It was determined that there is a relationship between ACT and the Concrete Sequential Learning Style. The ACT accounts for 10% of the variability in the Concrete Seuqential Learning Style Group which is significant at the .15 level in our example.

In relation to Pearson's Correlation Cooeficient procedure, the only

factor that showed a correlation variability was ACT and GPA, which showed a +.51 on a scale from -1 to +1. This is a strong correlation.

Additional findings concerning the relationship between learning style and choice of major has not been completed to date. Implications cannot be made at this point of time.

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DESCRIPTION OF SAMPLE
LEARNING STYLE INVENTORIES

5TH NATIONAL CONFERENCE ON ACADEMIC ADVISING

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1981

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Selected by:

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Group Embedded Figures Test - Herman Witkin, Phillip Oltman, Evelyn Raskin, and Stephen Karp.

Published by: Consulting Psychologist Press, Inc.
577 College Avenue
Palo Alto, California 94306

Cost: Sample Set (Manual not included) - $1.00
Scoring Key - $.50
Test Booklets - 25 for $13.00
Manual - $3.00

The Group Embedded Figures Test can be used for classroom testing to see if a person perceives a situation holistically, using environmental or social cues to provide interpretation (field dependent) or if one approaches situations analytically and is more inclined to define the situations in terms of internal cues (field independent).

Students are asked to locate a geometrical shape hidden within a more complex design. Eighteen items are presented and the test is limited to 20 minutes.

An individual adult test is also published as well as individual children's versions. Validity reports are available for all of these tests.

Learning Style Inventory (1976) - David A. Kolb

Published by: McBee and Company
137 Newbury Street
Boston, Massachusetts 02116

Cost: $10.00 for technical manual.
$ 6.25 for test sheets in packets of 25.
$ 6.25 for profile sheets in packets of 25.
$13.50 for a Self-Scoring Booklet, test sheet and profile sheet plus the technical manual.

Level: College/High School.

This instrument measures an individual's relative emphasis on four basic learning modes:

C.E.: Participation and using on-going events; perceive concretely with their senses and feelings.

R.O.: Observing, reflecting and examining past experiences; perceive with their intellect and process reflectively by watching.

A.C.: Using theoretical inputs such as reading, lectures, and models; perceive with their intellect and process by doing.

A.E.: Actively practicing new skills, experimenting (tend to be introverts); perceive concretely with their senses and feeling and process actively by doing.

The instrument lists nine sets of four words. Participants are asked to rank order each of the four words in each set in terms of which are most descriptive of themselves as learners. The self-scoring booklet contains the test, profile and grid, along with an easily understood description of the four basic modes--C.E., R.O., A.C., and A.E. After scoring the sets of words, the scores can be combined on a two-dimensional graph to categorize each participant as--Accommodator, Diverger, Converger or Assemilator.

In the booklet, Learning Style Technical Manual, test validation and national norms are provided.

The instrument takes approximately ten minutes to administer and should be followed by a 15-30 minute explanation of the categories.

Learning Style Inventory - Rita Dunn, Kenneth Dunn and Gary Price

Published by: Price Systems, Inc.
Box 3067
Lawrence, KS 66044

Cost: $8.00 for a set of 30 reusable L.S.I. inventory booklets.
$5.00 for 60 answer sheets for Grades 3, 4, 5.
$4.50 for 60 answer sheets for Grade 6 and above.
$10.00 for Specimen Set - Manual, Research Report, Inventory Booklet, Answer Sheet.

Level: Grades 3 through 12.

This instrument is for diagnosis and suggested perscription for individual student learning. It identifies preferred learning environments to achieve maximum individual academic progress. It is designed to analyze the conditions under which students prefer to learn and assesses individual preferences in (a) environmental (sound, heat, light and design); (b) emotionality (motivation, persistence, responsibility, structure); (c) sociological needs (self oriented, peer oriented, adult oriented or combined ways); and (d) physical needs (perceptual preferences, time of day, food intake and mobility).

The completed tests are mailed in for scoring. A computerized summary of each student's preferred learning style is provided to the instructor. A computerized class summary is also provided to the instructor so that teachers can group students with similar learning style elements. A sub scale summary is also available which can be used to determine which of the areas are of major or of least importance to the group.

The instrument takes 30 minutes to complete. Data concerning validity and norms are available from Price System.

An adult version, Productivity Environmental Preference Study (P.E.P.S.) is also available. It provides the instructor with a profile rather than a list.

Perscription for Learning - Nancy Dixon

Published by: University of Texas
Department of Curriculum and Instruction
Austin, Texas 78712

Cost: $10 for 1 specimen set.
$4 per test booklet.
$2 for scoring as a computer printout.

Level: College/Adult

The instrument created by Nancy Dixon evaluates 52 separate factors related to learning. Among those evaluated are listening, observation, reading, persistence, mobility, tolerance, noise and educational values. The answers are fed into a computer which analyze each learning factor separately and then analyzes the interrelationships between factors.

A computer printout is provided to each student which explains in narrative form the instructional method and study techniques that would lead to success.

The instrument is being revised into a shortened version. The new version should be ready for use by spring semester 1982. By fall of 1982, another version will be available that can be taken by a student at a micro computer terminal with immediate feedback.

The present instrument takes from 40-75 minutes to complete and can be purchased for self or group administration.

The Learning Style Inventory (L.S.I.) - Joseph S. Renzulli and Linda H. Smith

Published by: Creative Learning Press, Inc.
P. O. Box 320
Mansfield Center, CT 06250

Cost: Learning Style Inventory Manual - $6.95
Class set of Learning Styles Inventories (Including 30 Student Forms, 1 Teacher Form and Computer Scoring) $18.50
Specimen Set (Includes Manual, 1 Teacher Form and 1 Student Form) $7.50

Level: Grades 4-12.

This instrument was designed to measure students' preferences for particular modes of instruction within the classroom. It is composed of 65 items which are designed to measure attitude toward the following nine modes of instructional strategies most preferred by individual students: (1) Projects; (2) Drills and Recitation; (3) Peer teaching; (4) Discussion; (5) Teaching games; (6) Independent study; (7) Programmed instruction; (8) Lecture; (9) Simulation. Students are asked to indicate their reaction to each activity along a five point scale.

All L.S.I. forms are scored by computer. Computer analysis is provided in an easy-to-interpret report, along with a class profile of learning style preferences.

The instrument requires approximately thirty minutes to complete.

Cognitive Style Interest Inventory - Joseph E. Hill

Published by: Oakland Community College
Orchard Ridge Campus Bookstore
27055 Orchard Lake Road
Farmington Hill, Michigan 48018

Level: Elementary - Adult Level.

This is a self-report instrument based on a rank ordering which measures abstractions, visual, tactile, and auditory perceptions, motor coordination, and social interaction.

Cognitive Style Mapping identifies students' strengths and weaknesses through major, minor, and negligible categories. It serves as a basis for developing a Personalized Educational Program (PEP) which uses varied instructional modes to match students and the educational task.

The approximate administration time is fifty minutes.

Inventory of Learning Process (1977) - Ronald R. Schmeck

Published by: Department of Psychology
Southern Illinois University
Carbondale, IL 62901

Level: College

The inventory consists of 62 items, true-false, with a self-report inventory. It is grouped by factor analysis into synthesis-analysis, study methods, fact retention and elaborative processing.

Schmeck feels students should be encouraged to develop a learning style which is thoughtful, deep, and elaborative. Through the use of specific instructional strategies, teachers should discourage shallow reiterative, information processing.

The instrument takes approximately twenty minutes to administer.

Learning Style Inventory by Harvey F. Silver and J. Robert Hanson (1980)

Published by: Hanson Silver & Associates, Inc.
Box 402
Moorestown, New Jersey 08057

Cost: Learning Style Inventory $2.50
Teaching Style Inventory $2.50

The Learning Style Inventory (LSI) is a self-descriptive test, designed to help you identify your own learning profile based on preferences for how information is collected and judgements are made about its significance. It is based on Carl Gustav Jung's Theory of Psychological Types.

Twenty sets of four behaviors are ranked, based with weighted numbers (5, 3, 1, 0) on your own preference.

The self analysis profile shows your preference in the way you collect information--"sensing and intuiting".

The four distinct combinations are:

1. Sensing/Thinking (S-T)
2. Sensing/Feeling (S-F)
3. Intuitive/Thinging (N-T)
4. Intutivie/Feeling (N-F)

After your style has been determined based on your personal judgements, a Learning Preference Profile can be identified. It is important to identify not just one's learning style but one's learning profile since no one learning style adequately represents the complexity of one's learning behavior. We all operate in a variety of ways in different situations. We frequently use a combination of styles at any one time.

Learning Style descriptions are provided in the Self Analysis Profile under headings of:

Overview;
Approach to Learning;
Learns Best.

Transaction Ability Inventory - Anthony F. Gregorc

Available through: Anthony Gregorc
School of Education
The University of Education
Storrs, Connecticut 06268

Level: Grades 9 - adult.

This is a self-report instrument to aid one to identify one's natural means of transacting with one's environments. The instrument provides ten sets of four words; each of the four relate to one of the stages of learning. The participant is asked to rank order the four words in each set in terms of which are most descriptive of themselves, deep down (SELF). The scores are places on a Transaction Ability Profile Chart and catagorize each participant as:

Concrete Sequential
Abstract Random
Abstract Sequential
Concrete Random

Concrete/sequential oriented learners like to use workbooks, manuals, demonstration teaching, programmed instruction, hands-on materials and well-organized field trips. The abstract/random oriented learner shows a preference for group discussion, movies, short lectures accompanied by questions/answers and discussing and television. The abstract/sequential learner feels the need for extensive reading assignments, substantive lectures, audio tapes, and analytical "think sessions". Concrete/random learners like games and simulations, independent study projects, problem solving activities and optional reading assignments. Strong emphasis is placed on matching of instructional materials and methods to meet the range of individual preferences. Gregorc also recommends that selected nonpreferences be utilized at times to encourage students to strengthen those areas.

The instrument takes about five to ten minutes to administer and should be followed by interpretion of the categories.